ers last November. It is a suggestion well worth considering.

Has not the time now come when we physics teachers of America should begin experimenting with a purpose of trying to discover the live way of teaching our subject? Are we not now ready to right-about-face, and, instead of trying to make our concrete material abstract and mathematical—instead of trying to teach Newton's absolute time and space and motion—to try to make mathematics and the absolute concrete and real through physics? Shall we not take up the movement now being pushed so successfully by Perry and Armstrong in England, by Klein and Poske in Germany and by the brothers Poincaré in France, and push it along in free and progressive America as well? Surely the time is at hand when the work will be done. Let us therefore all lay hold and help, for better times are coming.

C. R. Mann
The University of Chicago

ALBERT B. PORTER

Albert Brown Porter was born at Indianapolis on March 16, 1864, and died at Chicago on April 16, 1909. He was a man of rare endowment, well known to many of the readers of this journal. Since, however, his published researches are comparatively few in number, he was by no means so widely known as his native abilities would ordinarily have made him.

His preparation for college, obtained at the Indianapolis High School, enabled him to enter Stevens Institute at the early age of fifteen. Most of the best training of this precocious lad was, however, obtained in his own home and at the hands of his own father, Albert G. Porter, who was governor of Indiana during the early eighties. From this period dates his acquisition of an almost faultless English style and the beginning of his acquaintance with tools and with the properties of matter. In 1882 he migrated to Purdue University, where he graduated B.S. in 1884.

The Richmond, Ind., High School was fortunate in securing the services of this modest, scholarly and skillful young man during the seven years immediately following his graduation. More than one of his students have testified to his inspiring influence and to the manner in which he helped rapidly to upbuild this institution.

In 1891 he went to Baltimore to pursue, under Rowland, Franklin and Newcomb, the subject of physics to which from earliest boyhood he had been devoted. His fellow students still recall that judicial, alert and independent attitude of mind displayed by him regarding all subjects. Pure science being his ruling passion, the atmosphere of Johns Hopkins University was more congenial to him than any other which he subsequently found.

It was during this period that he was married to Miss Therese Study, whom he had first learned to know as a student in the Richmond High School.

In 1894 he accepted appointment to the chair of physics in the then recently founded Armour Institute. It seems almost needless to add that the department was at once placed upon a high plane. His lectures were beautifully illustrated with many novel experiments and were always set forth in that clear English which can result only from clear thinking. Characteristic of the man is a summer spent with Mr. O. L. Petitdidier in learning the technique of lens grinding, figuring and polishing. After eight years' experience in teaching technical students he resigned in order to take up the manufacture and importation of high-grade physical apparatus, operating under the name of "The Scientific Shop." But we must not imagine that Professor Porter ceased to teach when he entered upon the commercial side of his work. On the contrary, his clientele became larger and more advanced, being composed mainly of instructors in physics from all parts of the country; for, being a man of cultivated curiosity and lucid expression, he had satisfaction not only in gathering information, but also in freely imparting knowledge.

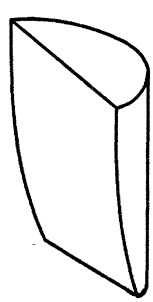
His published papers relate chiefly to the diffraction theory of microscopic vision and

to other optical questions. The various circulars which issued from the The Scientific Shop were always his own, and those who have had the pleasure of reading them will recognize that they are unique in accurate scholarship, in instructiveness and in absolute candor.

No account, however brief, of Mr. Porter's work would be fair, not to say adequate, which did not include some reference to his several large volumes of manuscript "notes," in which he was in the habit of recording new ideas and experimental results. A single citation which will serve to illustrate the cleverness, ingenuity and skill of the man may also be of value to makers of lenses. It is a note, referring to an extension of the benefits of the bifocal lens invented by Benjamin Franklin and having interest as being the last problem upon which he was engaged, and is as follows:

MULTIFOCAL SPECTACLE LENS

Intended to replace the bifocal lens. Would have two advantages (1) "invisibility" in the sense of not being evidently different from a single focus lens and (2) the multifocal property should give clear vision at any distance from (say) 10 inches to infinity.



One face of the lens is curved only in the horizontal plane and the other only in the vertical plane, the radii of each surface growing shorter from top to bottom of the lens in about the same ratio. Thus one surface may be a circular cone and the other a spiral cylinder. The curvatures need not increase uniformly from top to bottom, but the increase should be at the same rate on each side so as not to introduce cylindrical error. Vertical or horizontal astigmatism can be corrected by making one surface of uniformly greater curvature than the other. The surface may be mechanically ground and polished by simple mechanism. Angular astigmatism can possibly be corrected by a superposition of curves, but the surface would not then be "ruled," and the polishing operation might be less certain.

The fault of the lens is that the curvatures and foci are different at top and bottom of the eye. This difference is, however, slight in a large lens, and unless presbyopia is great may not be enough to cause inconvenience.

A. B. P.

August 17, 1907

Under date of January 24, 1909, occurs a two-page note describing in detail a method by which the grinding tools for such a multifocal lens may be made. Then the following:

MULTIFOCAL LENSES

Could be made with spherical surfaces by using a glass varying in density (refractive index) from top to bottom. Such a glass could be made by using a flat melting pot heated from above (to avoid convection currents) in which was placed in very thin layers the varying materials needed to give the varying density. A "guard ring" should be put in the center of the melting pot to avoid convection currents due to unequal heating or cooling around the sides of the pot. The glass should be kept in a molten condition long enough for diffusion to make the density gradient uniform, and the heat should be turned off so slowly that the top always remains hotter than the bottom to avoid convection. A. B. P.

February 5, 1909

Hundreds of suggestive "notes" of this type lead one to wish that it might have been possible for a mind so fertile in resources to have devoted its energies to investigation and pure science, unhampered by the daily routine of teaching or commerce.

HENRY CREW

BANQUET IN HONOR OF PROFESSOR BESSEY

THE Botanical Seminar of the University of Nebraska gave on June 5 an anniversary banquet in honor of Charles Edwin Bessey, to celebrate the twenty-fifth anniversary of his professorship in Nebraska, preceded by fourteen years of professorial service at the Iowa Agricultural College. Dr. Roscoe Pound pre-